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REPORT

Tracking Transfer:
Measures of Effectiveness in
Helping Community College Students
to Complete Bachelor's Degrees



Project on Academic Success



INDIANA UNIVERSITY

Tracking Transfer: Measures of Effectiveness in Helping Community College Students to Complete Bachelor's Degrees

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INTRODUCTION

This report is an update of the January 2016 Transfer Tracking report, which was a collaboration among the National Student Clearinghouse Research Center, the Community College Research Center (CCRC) at Teachers College, Columbia, and Aspen Institute's College Excellence Program (Jenkins & Fink, 2016). It is the first in an annual series from the National Student Clearinghouse Research Center that will investigate postsecondary student transfer outcomes. The goal is to provide institutions and states with a set of specific, up-to-date metrics with which to benchmark and measure progress. The 2016 report focused on the transfer and bachelor's degree completion outcomes of students who started at two-year institutions. It created a new set of metrics that have redefined how successful transfer partnerships between two- and four-year institutions and among systems of institutions within states are measured. This 2017 report updates those outcomes by three years, using a new cohort of degree-seeking students who started their postsecondary education at a two-year public institution in the fall of 2010. This report also disaggregates the different transfer metrics by state to cover institutional, state, and national postsecondary transfer statistics for the different levels of benchmarking and policymaking. Results from the 2017 report can be used as a benchmarking reference in institutional-level reports, in particular by two- and four-year institutions.

The previous National Student Clearinghouse Signature report (Shapiro et al., 2015) demonstrated the prevalence of transfer and mobility among all students, regardless of the starting institution type. The analyses presented in this report focus solely on the vertical transfers for students who began their postsecondary education at a community college. Recently, educational researchers at the CCRC and Aspen Institute began investigating strategies that may increase the success, prevalence, and outcomes of two- to four-year transfers (Wyner, Deane, Jenkins, & Fink, 2016). In light of these efforts, regular updates are needed to track the progress and effectiveness of these strategies and, ultimately, build on success.

Defining Transfer and Report Outcomes

This report defines student transfer as movement from a two-year institution to a four-year institution with or without first receiving an award (either a certificate or associate degree), including transfer across institutions, sectors, and states. The report includes all first-time students, regardless of whether they enrolled exclusively full time, exclusively part time, or had mixed enrollments.

This report uses the five metrics developed in the original Tracking Transfer report (Jenkins & Fink, 2016). These five metrics are becoming standards in the field because they enable community colleges, as transfer-sending institutions, and four-year institutions, as transfer-receiving institutions, to measure their effectiveness in meeting the needs of students and states. Table 1 below presents the definitions of the metrics.

Table 1. Outcome Definitions

Institutional Outcome	Definition	Unit of Analysis
Transfer-out rate	The number of transfer students who started at the community college divided by the number of students in the community college's fall 2010 cohort.	Community college
Transfer-with-award rate	The number of transfer students who started at the community college and earned a certificate or associate degree from that college prior to their earliest enrollment at a four-year institution, divided by the number of transfer students in the community college's fall 2010 cohort.	Community college
Transfer-out bachelor's completion rate	The number of transfer students who started at the community college and earned a bachelor's degree from any four-year institution within six years of community college entry, divided by the number of transfer students in the community college's fall 2010 cohort.	Community college
Transfer-in bachelor's completion rate	The number of transfer students in the fall 2010 cohort who started at any community college and earned a bachelor's degree from the four-year institution within six years of community college entry, divided by the number of transfer students in the fall 2010 cohort who started at any community college and enrolled at the four-year institution. Transfer students who enrolled at multiple four-year institutions were counted for each four-year institution.	Four-year institution
Community college cohort bachelor's completion rate	The number of students who started at a community college and earned a bachelor's degree from any four-year institution within six years of community college entry, divided by the total number of students in the community college's fall 2010 cohort.	Community college and four-year institution partnership

The same five metrics are also presented by a set of institutional characteristics (program mix, urbanicity, average student socioeconomic status (SES), selectivity as well as income and other student characteristics in order to provide the necessary student, institution, and community context (see Appendix A for detailed definitions of each measure).

Literature Review

Of the students pursuing higher education in the United States, roughly 40 percent of first time freshmen start in community colleges (Doyle, 2009; NCES, 2015; Shapiro et al., 2015; Shapiro et al., 2016). Among students who start postsecondary education at two-year public institutions, 42 percent are from low-income families (Policy Alert, 2011). Jenkins and Fink (2016) found that lower income students were as likely as higher income students to earn an associate degree or certificate before they transferred to four-year institutions, but less likely to transfer or earn a bachelor's degree after transfer. Considering that sizable proportion of all entering postsecondary students begin their college education at a community college, it is important to investigate the patterns of transition into a four-year institution.

Previous studies indicate that although a majority of students transfer from community colleges without a degree (Shapiro et al., 2015), the likelihood they will earn a bachelor's degree from a four-year institution is stronger if they earned a certificate or an associate degree before transferring (Ehrenberg & Smith, 2004; Crook, Chellman, & Holod, 2012; Shapiro et al., 2013; Kopko & Crosta, 2016). Jenkins and Fink (2016), however, highlighted that the connection between community college credential and bachelor degree completion is unclear in most states. In regards to time to degree, Lichtenberger and Dietrich (2017) found that while community college attendance can extend time to degree, it has little bearing on bachelor's degree completion after six years of enrollment. This report extends these previous findings by investigating five different transfer metrics for the two-year institutions in which students started as well as the four-year institution to which they subsequently transferred. These analyses are also disaggregated by different institutional and student characteristics in order to provide a more detailed and comprehensive look at current vertical transfer and completion patterns.

Despite the variations in findings regarding the impact of community college enrollment on bachelor's degree completion, researchers have identified some challenges in the student transfer process. Politics and divergent academic cultures lead to curricular and cultural gaps between community colleges and four-year higher education institutions (Kopko & Crosta, 2016; Senie, 2014; Townsend & Wilson, 2009). Other factors include the environmental differences between community colleges and four-year institutions, the absence of articulation agreements between four-year colleges and two-year institutions, and disparities in student academic preparedness (Bailey, 2012; Bailey & Cho, 2010; Doyle, 2009; Ishitani, 2006). The results provided here show the transfer and completion patterns for students who transfer into four-year institutions as well as the completion patterns for these students after they transfer into a four-year institution. These findings acknowledge the space for the institutional evolution of student transfer practices in order to promote higher educational attainment for postsecondary students. Particularly, customizing programs and policies according to the transfer goals that community colleges and four-year institutions are striving to achieve.

Articulation agreements amongst institutions have been identified as one of the biggest enhancements needed to ease the transition for students moving between multiple institutions (Hodara, Martinez-Wenzl, Stevens & Mazzeo, 2016; Jenkins & Fink, 2016; Stern, 2016). Various state and national initiatives have been proposed as possible frameworks to simplify the transfer process for students (Mathien, Nepstad, Potenza, Kim, & Mertes, 2016; Tennessee Higher Education Commission, 2016; Walker, Sherman, & Shea, 2016). These agreements help community college students complete baccalaureate degrees by maximizing the transfer of credits in order to meet the degree requirements of the four-year institutions to which they transfer (Townsend, 2007). This report can help guide these initiatives by providing national results that schools can use as benchmarks against their own patterns to help inform policies, goals and progress.

Faculty, administrators, and policymakers need to gain a more comprehensive understanding of the intricate movements involved with student enrollment, in order to design appropriate policies and programs to help transfer students meet their educational goals (Borden, 2004; Friedel & Wilson, 2015; Hannemann & Hazenbush, 2014; Marling, 2013). The detailed findings provided in this report are useful for state and institutional policymakers as well as college administrators and the public. Although prior research has investigated two- to four-year transfer patterns (Jenkins & Fink, 2016; Shapiro et al., 2015), this report is the first in an annual series that provides up-to-date statistics for both two- and four-year institutions by different institutional and student characteristics. Having a more nuanced understanding of two- to four-year transfer patterns will better equip institutional policymakers to accommodate students on different enrollment pathways.

What to Find in this Report

This report focuses on the full cohort of first-time students who started their postsecondary studies at community colleges in fall 2010. The cohort contains over 850,000 students, including both part-time and full-time enrollees, and excluding first-time enrollees with prior dual enrollment and students who were dual-enrolled in high school in fall 2010. It tracks their transfer and completion patterns at four-year institutions over a period of six years, until spring 2016. The report is comprised of four main sections:

1. Transfer metrics disaggregated by characteristics of the starting institution
2. Transfer metrics disaggregated by student characteristics
3. Transfer metrics disaggregated by characteristics of the four-year institutions
4. State-level transfer metrics, including the distributions of in-and out-of-state transfers

Transfer measures were disaggregated by five two- and four-year institution-level characteristics. Table 4 shows the descriptive statistics on the proportion of enrollments by the different institutional characteristics.

Table 2. Share of Institutions and Enrollments by Institutional Characteristics

Characteristic	Community Colleges			Four-Year Institutions	
	Share of Institutions (n=865)	Share of Fall 2010 Cohort (n=852,439)	Share of Transfer Students (n=268,749)	Share of Institutions (n=1,992)	Share of Transfer Enrollments (n=299,443)
Sector					
Public				32%	73%
Private Nonprofit				54%	18%
Private For-profit				11%	8%
Selectivity					
Nonselective				41%	32%
Moderately Selective				31%	44%
Very Selective				20%	22%
Missing				8%	2%
Program Mix					
Primarily Academic	58%	56%	55%		
Primarily Occupational	42%	44%	45%		
Urbanicity					
Rural	22%	12%	12%	5%	2%
Suburban/Town	44%	41%	43%	43%	38%
Urban	34%	46%	46%	51%	60%
Average Student SES					
Lower Quintiles	40%	22%	18%	40%	29%
Middle Quintile	20%	18%	16%	20%	21%
Top Quintiles	40%	59%	65%	40%	50%

As Table 2 shows, slightly over one-half of the four-year institutions to which students transferred (54 percent) were private nonprofit institutions, followed by public institutions (32 percent) and private for-profit institutions (11 percent). The majority of four-year institutions were located in urban (51 percent) and suburban/town (43 percent) areas, with only five percent in rural areas. In this study, institutional SES groupings were determined based on the ranking of the average SES of the students that they serve (see appendix A). Lower-SES serving community colleges (those below the 40th percentile of institutional SES) enrolled only 22 percent of the students in the cohort, and produced even fewer (18 percent) of the transfer students. At the four-year level, the lower 40 percent of institutions by SES received only 29 percent of the transfer students

RESULTS

Transfer Outcomes

Tables 3 and 4 show the certificate and degree outcomes for all first-time students who began their postsecondary education at U.S. community colleges (public two-year institutions) in fall 2010 as well as for the subset of those who subsequently transferred to a four-year institution. In both cases, the outcomes are measured as of spring 2016, six years after the cohort started college (regardless of when the student actually transferred within the six year window).

Table 3. Six-Year Student Outcomes (N= 852,439)

Outcome	Fall 2010 Cohort	Transfer Students
Earned a Certificate or Associate Degree	29%	34%
Earned a Bachelor's Degree	13%	42%
Number of Students	852,439	268,749

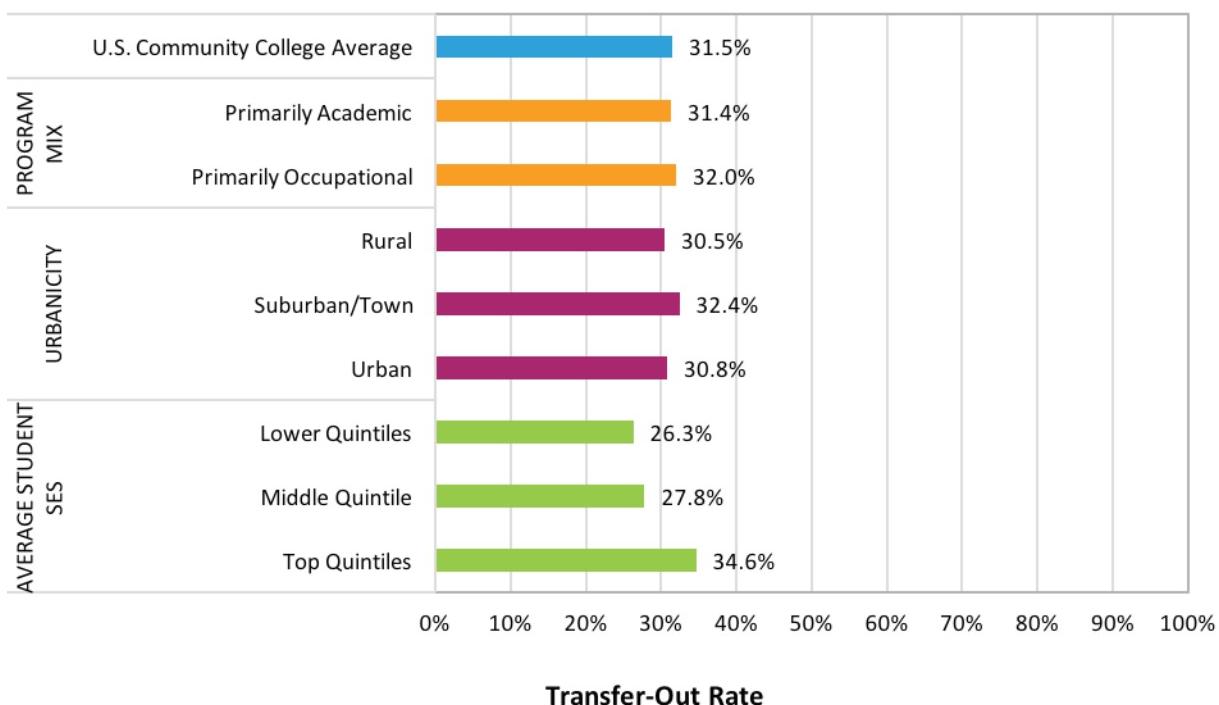
Table 4. Six-Year Outcomes of Transfer Students by Income (N=268,749)

Outcome	Lower Income	Higher Income	All Transfers
Earned a Pre-Transfer Certificate or Associate Degree	33%	33%	34%
Earned a Bachelor's Degree	35%	49%	42%
Number of Students	66,801	97,357	268,749

Metrics for Community Colleges

Out of 852,439 students who first enrolled at a community college, 31.5 percent (268,749) transferred to a four-year institution within six years. Among those students, about one-third (34 percent) transferred after receiving a credential (either a certificate or associate degree) at the starting school. In addition, 42 percent of those who transferred earned a bachelor's degree within six years of starting in the community college. Those bachelor's degree completers represent just 13 percent of the original starting cohort. Among those who transferred, lower and higher income students had similar rates of receiving a credential from the community college before their transfer (33 percent). Higher income students were more likely to earn a bachelor's degree after they transferred, however, compared to lower income students (49 percent vs. 35 percent).

Figure 1. Average Transfer-Out Rates by Institutional Characteristics (N=852,439)*

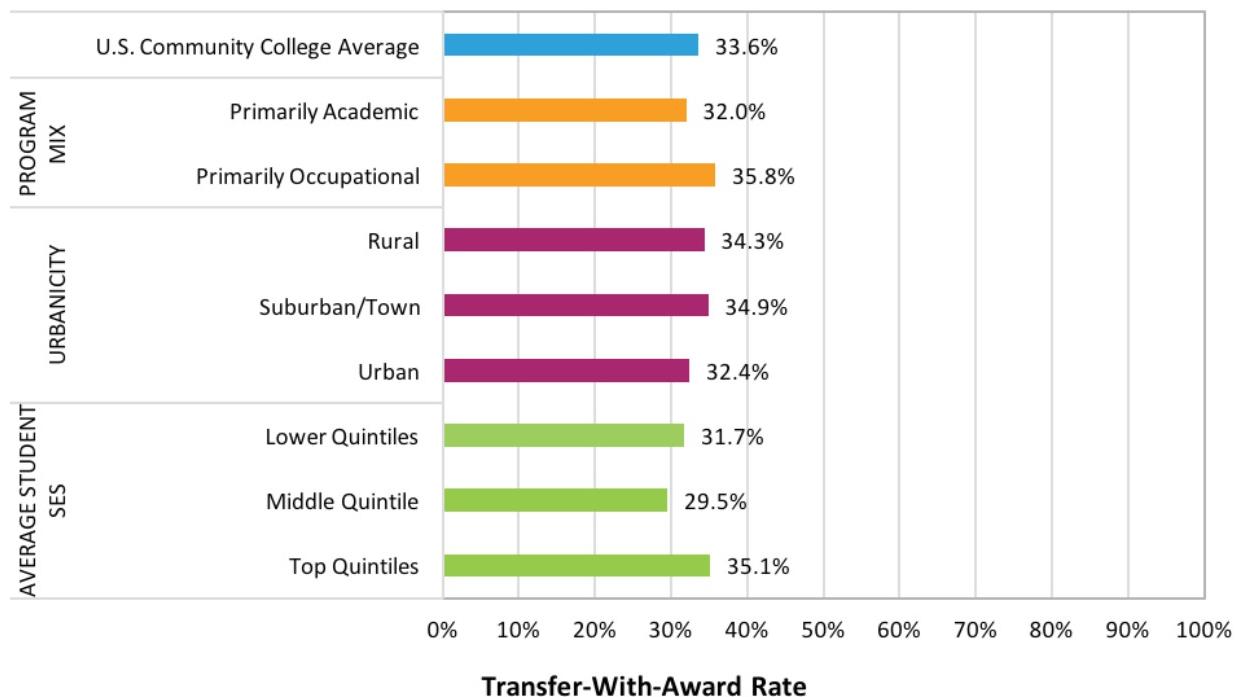


*This figure is based on data shown in Table 4.

Transfer-out rate is calculated by dividing the number of students who transferred out of the community college to a four-year institution by the number of students in the college's entering cohort. Figure 1 shows the average transfer-out rate of students in the fall 2010 cohort by institutional characteristics of the community college. Colleges that award proportionally more occupational credentials and those that award more academic degrees had similar transfer-out rates (31.4 percent vs. 32.0 percent, respectively). Colleges located in suburbs or towns had a slightly higher transfer-out rate on average (32.4 percent) than urban and rural colleges (30.8 and 30.5 percent, respectively). Furthermore, community colleges that served wealthier students had higher transfer-out rates than those serving lower-SES students. The average transfer-out rate among colleges whose median student SES was in the top quintile was 8 percentage points higher than that of the community colleges that serve higher proportions of lower SES students (34.6 percent and 26.3 percent, respectively).

Transfer-With-Award Rate

Figure 2. Average Transfer-With-Award Rates by Institutional Characteristics (N=852,439)*



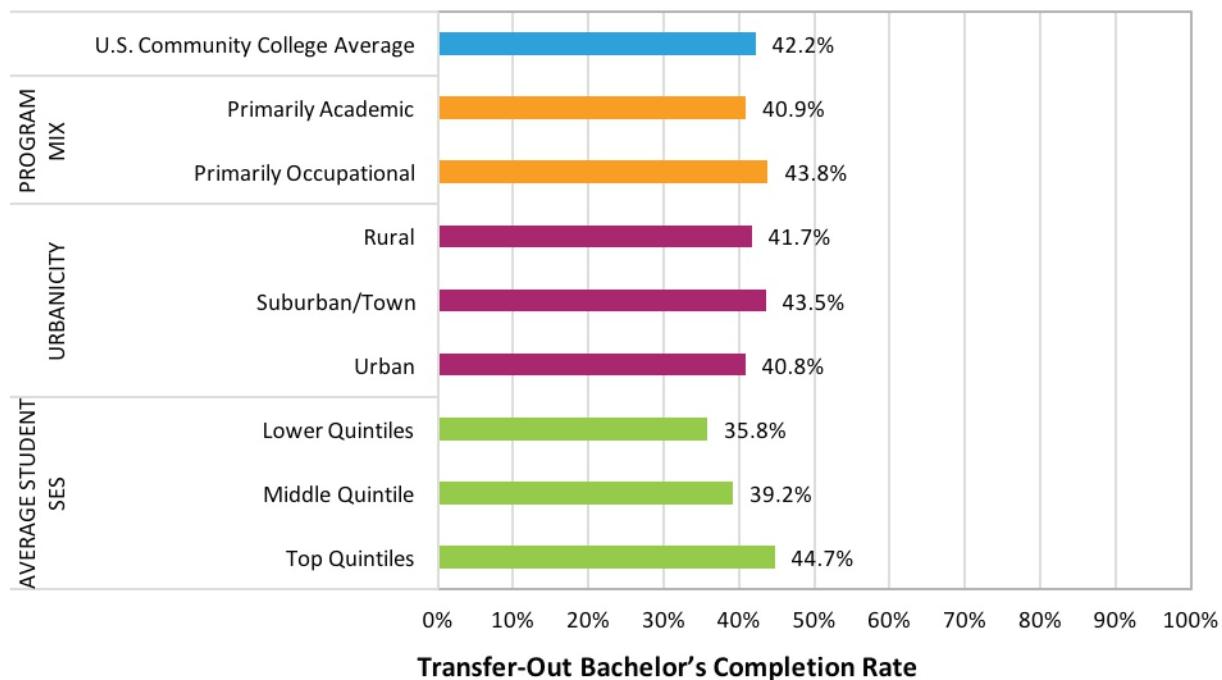
*This figure is based on data shown in Table 4.

Transfer-with-award rate is calculated by dividing the number of transfer students who earned a community college credential prior to transferring to a four-year institution by the number of transfer students.

Figure 2 highlights the transfer-with-award rates by the characteristics of the starting community college. About one-third of transfer students from primarily academic (32.0 percent) or primarily occupational (35.8 percent) community colleges earned a certificate or associate degree before transferring to four-year institutions. Transfer students from rural (34.3 percent) and suburban/town (34.9 percent) community college locations were more likely to transfer after earning a certificate or associate degree than students from urban (32.4 percent) locations. Community colleges that serve students in the top socioeconomic quintiles had higher transfer-with-award rates than community colleges that serve students in the low socioeconomic quintiles (35.1 percent and 31.7 percent, respectively).

Transfer-Out Bachelor's Completion Rate

Figure 3. Average Transfer-Out Bachelor's Completion Rates by Institutional Characteristics (N=852,439)*



*This figure is based on data shown in Table 4.

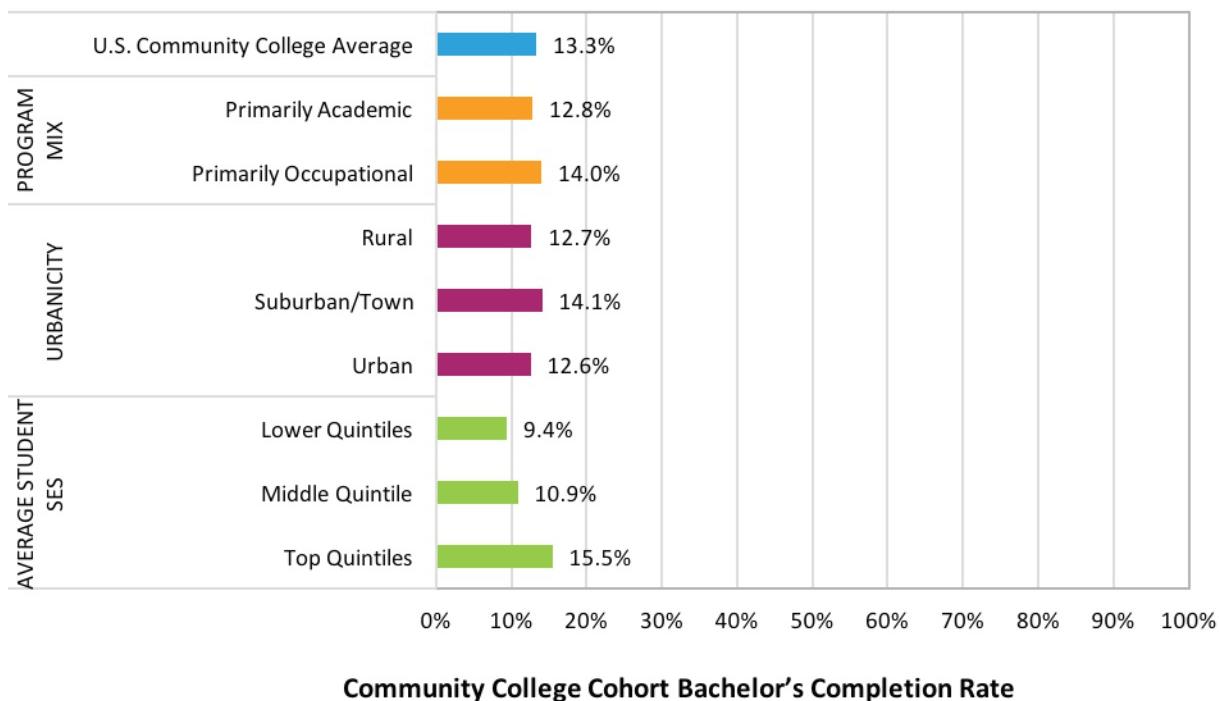
Transfer-out bachelor's completion rate is calculated by dividing the number of transfer students who earned a bachelor's degree, from any four-year institution, within six years of entering a community college by the total number of transfer students.

Figure 3 shows the average rate at which students earned a bachelor's degree after transferring to a four-year institution by characteristics of the starting community college. The average bachelor's completion rate of students who transferred from primarily occupational community colleges (43.8 percent) was higher than those who transferred from primarily academic institutions (40.9 percent). In terms of location, urban community colleges had lower transfer-out bachelor's completion rates (40.8 percent) than suburban/town (43.5 percent) and rural (41.7 percent) colleges. Students who began their postsecondary studies in community colleges that serve proportionally more students from higher SES households were more likely to earn a bachelor's degree upon transferring to a four-year institution than students who began at lower SES community colleges. In fact, students who transferred from higher SES serving community colleges were, on average, more likely (44.7 percent) to complete a bachelor's degree than those who transferred from lower SES serving community colleges (35.8 percent).

Community College Cohort Bachelor's Completion Rate

Community college cohort bachelor's completion rate is calculated by dividing the number of students who earned a bachelor's degree from any four-year institution within six years of starting at a community college by the total number of students in the community college's entering cohort. This metric is the interaction of the transfer out rate and the transfer-out bachelor's completion rate, and has significance for both community colleges and four-year institutions. It is also a key metric for states.

Figure 4. Community College Cohort Bachelor's Completion Rates by Institutional Characteristics (N=852,439)*



*This figure is based on data shown in Table 4.

Figure 4 displays average community college cohort bachelor's completion rates, by characteristics of the starting two year institution. For the U.S. overall, 13.3 percent of all students who started at a community college had completed a bachelor's degree at any four-year institution within six years. The bachelor's completion rate of students who started at community colleges with a primarily academic focus was, on average, slightly lower than those who started at institutions with a primarily occupational focus (12.8 percent vs. 14.0 percent). Cohort bachelor's completion rates for students who were enrolled in suburban community colleges were higher (14.1 percent) as compared to those who were enrolled in rural (12.7 percent) and urban (12.6 percent) community colleges. Similar to community colleges' average transfer-out rate results, the cohort completion rates were higher (15.5 percent) for students who transferred from community colleges that serve predominately higher SES students in comparison to institutions that primarily serve students from lower SES backgrounds (9.4 percent).

Transfer Outcomes by Student Characteristics

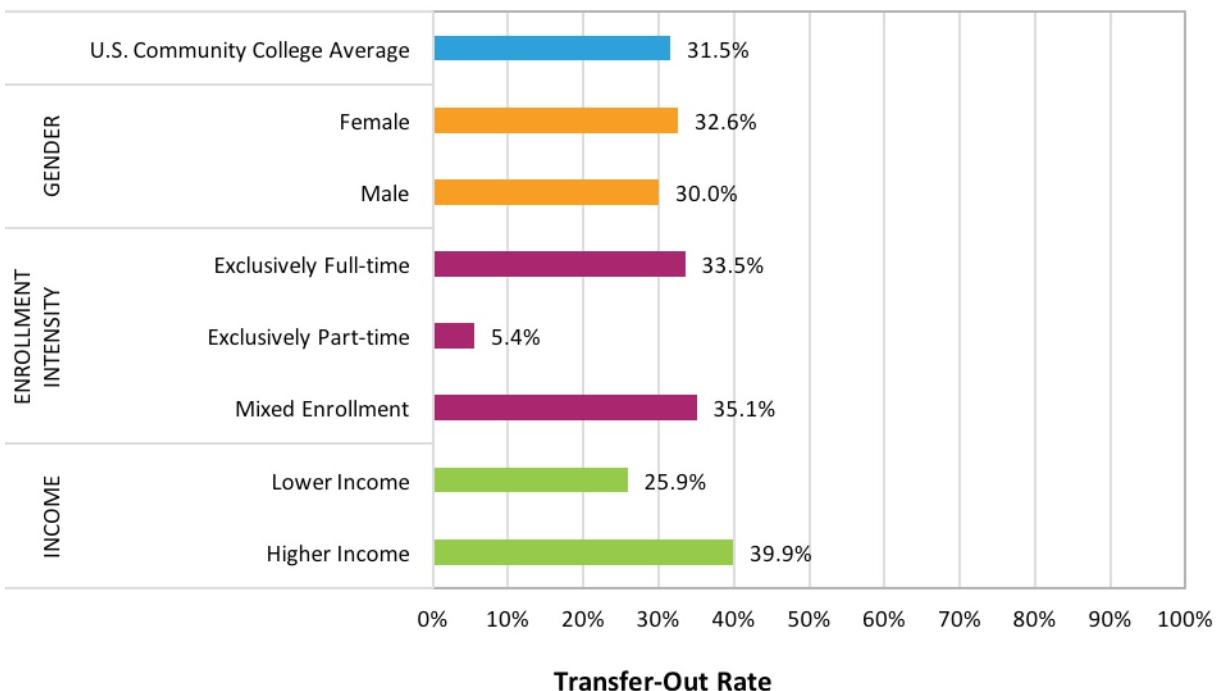
Figures 5 through 8 display transfer and completion outcomes by student characteristics. Among students who started at community colleges in fall 2010, women were more likely to transfer to a four-year institution than men (32.6 percent and 30.0 percent, respectively) (Figure 5). Women were also more likely to earn a bachelor's degree than men (14.0 percent and 12.4 percent, respectively) (Figure 8).

Among students who transferred, a higher proportion of women than men transferred with an award (36.3 percent and 31.4 percent, respectively) (Figure 6). Women who transferred were also more likely to complete a bachelor's degree than men (43.0 percent vs. 41.3 percent) (Figure 7).

There was a slight difference in transfer rates between students who enrolled exclusively full-time (33.5 percent) and those with mixed enrollment (35.1 percent) (Figure 5). However, a higher proportion (44.9 percent) of exclusively full-time students transferred with a credential from their starting community colleges in comparison to the students with mixed enrollment (30.1 percent) (Figure 6). In addition, there was a substantial difference (24 percentage points) in transfer-out bachelor's completion rates in favor of exclusively full-time students (61.4 percent) as opposed to mixed enrollment students (37.4 percent). Students who enrolled exclusively part time had the lowest transfer-out bachelor's completion rate (8.3 percent), which is not surprising given the limited time frame (6 years) for these students to complete a four-year degree (Figure 7).

Higher income students tended to transfer out to four-year institutions at a higher rate than lower income students (39.9 percent and 25.9 percent, respectively) (Figure 5). There was a small difference in terms of transfer-with-award rate: about a third of the students who transferred, both from higher income and lower income backgrounds, did so after receiving a credential (32.8 percent and 33.1 percent) (Figure 6). A closer look at their transfer-out bachelor's completion rates showed that about one-half (49.2 percent) of higher income transfers and one-third (34.9 percent) of lower income transfers graduated with a bachelor's degree within six years of entering higher education (Figure 7). Cohort bachelor's degree completion rates of higher income students were more than twice as high as those of lower income students: out of all starting students, 19.6 percent and 9.0 percent, respectively, had completed a bachelor's within six years (Figure 8).

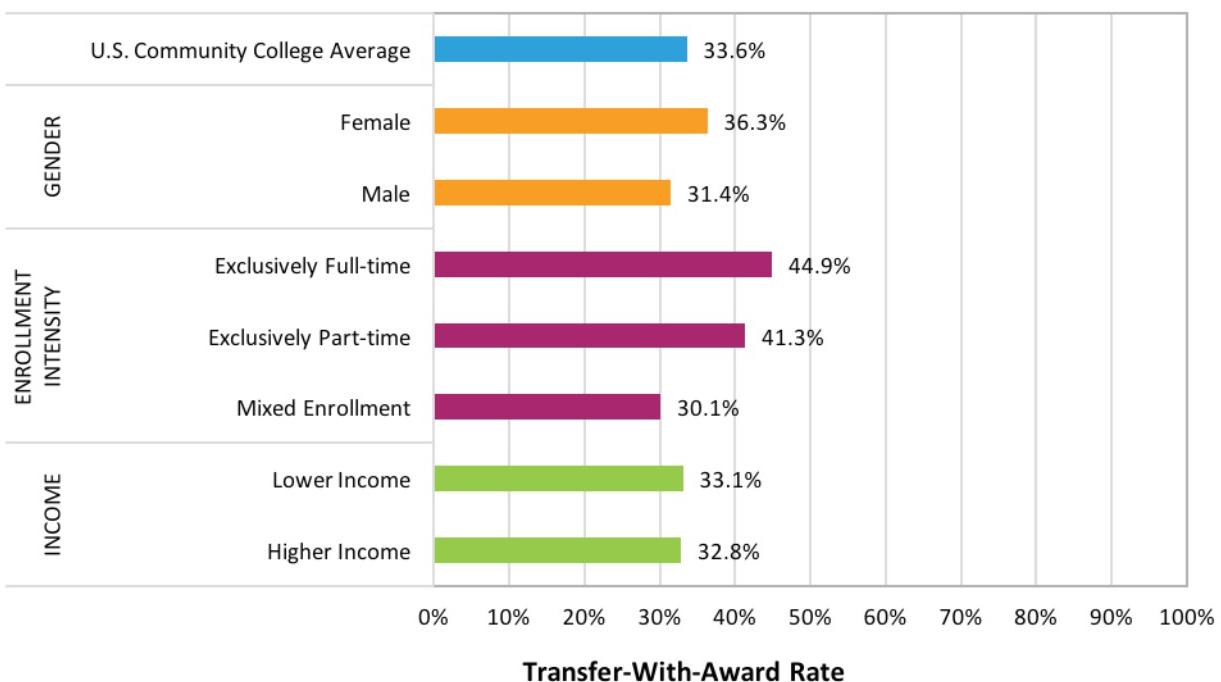
Figure 5. Average Transfer-Out Rates by Student-Level Characteristics (N=852,439)*



Note: Students with missing gender data were excluded from the above figure.

*This figure is based on data shown in Table 5.

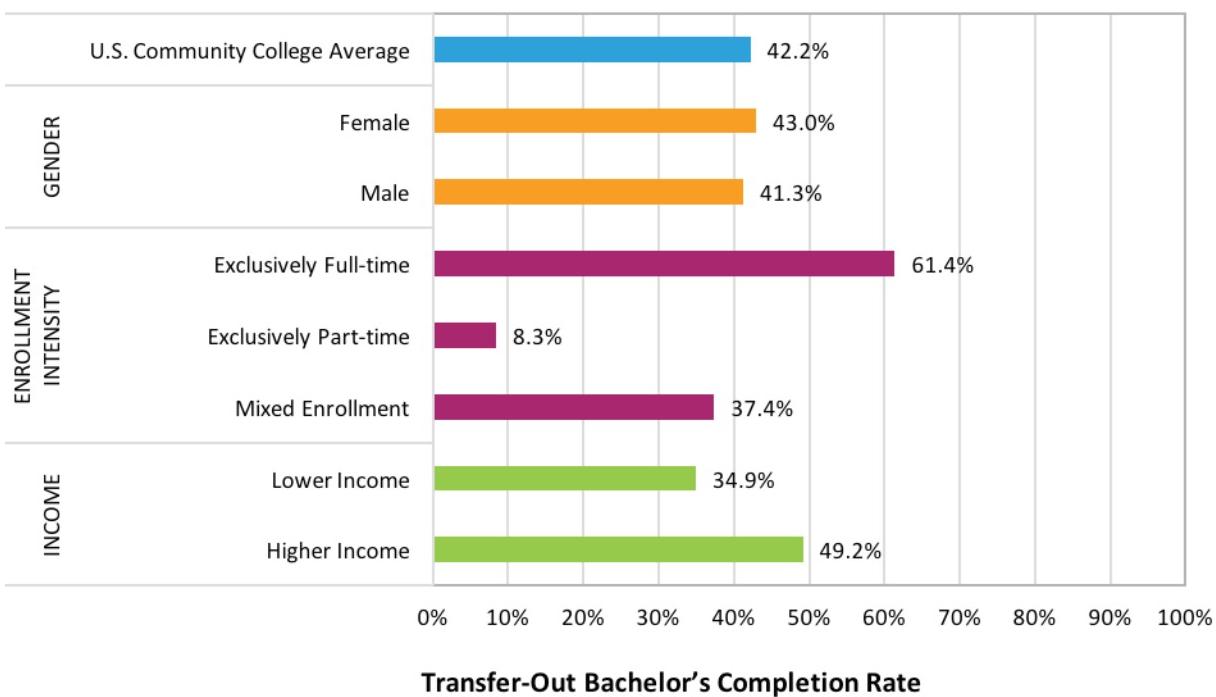
Figure 6. Average Transfer-With-Award Rates by Student-Level Characteristics (N=852,439)*



Note: Students with missing gender data were excluded from the above figure.

*This figure is based on data shown in Table 5.

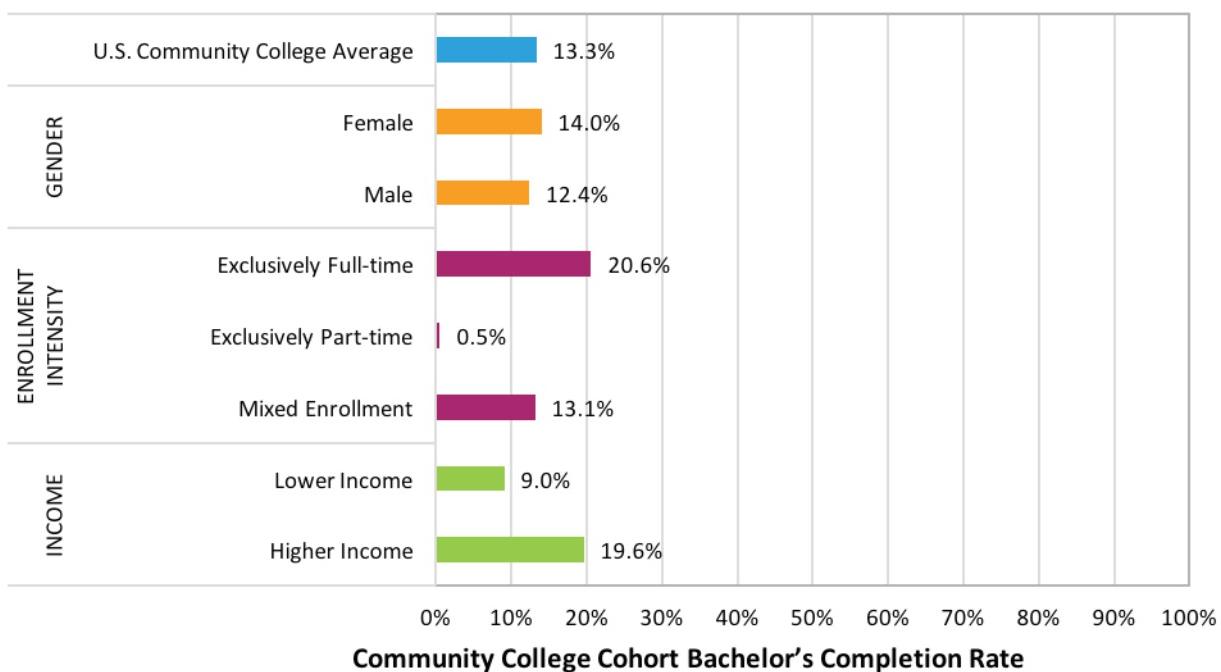
Figure 7. Average Transfer-Out Bachelor's Completion Rates by Student-Level Characteristics (N=852,439)*



Note: Students with missing gender data were excluded from the above figure.

*This figure is based on data shown in Table 5.

**Figure 8. Average Community College Cohort Bachelor's Completion Rates by Student-Level Characteristics
(N=852,439)***



Note: Students with missing gender data were excluded from the above figure.

*This figure is based on data shown in Table 5.

Metrics for Four-Year Institutions

The previous sections described the patterns of transfer and completion disaggregated by the types of community colleges from which students transferred. This section describes the completion outcomes disaggregated by the characteristics of the four-year institutions to which students transferred.

Transfer-In Bachelor's Completion Rate

Transfer-in bachelor's completion rate is calculated by dividing the number of transfer students who earned a bachelor's degree from the receiving four-year institution within six years of community college entry, divided by the number of students from the fall 2010 cohort who transferred to that institution. Transfer students who enrolled at multiple four-year institutions were counted for each four-year institution's transfer-in completion rate.

Figures 9 through 12 present bachelor's degree completion rates of students who transferred from community colleges to four-year institutions. Students who transferred to public four-year institutions were almost 10 percentage points more likely to finish a bachelor's within six years of community college entry than those who transferred to private nonprofit institutions (41.3 percent and 31.4 percent, respectively). On average, only 6.3 percent of students who transferred to private for-profit institutions earned a bachelor's degree within six years of enrolling in community colleges (Figure 9).

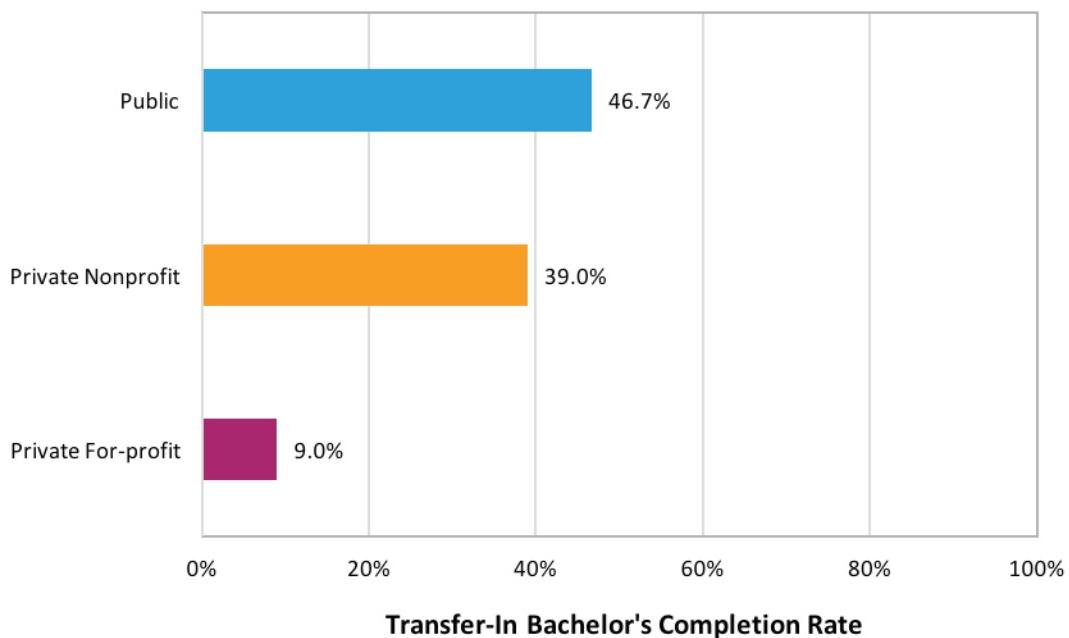
Because the six-year tracking period starts at the first enrollment in the community college, it is important to note that the number of years students spend either enrolled or stopped out before transferring to the four-year institution can impact the transfer-in bachelor's completion rate. The average time of transfer was 2.6 years after starting at the community college for those who transferred to a four-year public institution, 2.7 years for those who transferred to a private nonprofit institution, and

3.3 years for those who transferred to a four-year private for-profit institution. This leaves much more time after transfer before the six-year window closes for students at public and non-profit institutions, compared to for-profit institutions.

Students who transferred to very selective four-year institutions were 33 percentage points more likely to earn a bachelor's degree than those who transferred to nonselective institutions (54.5 percent and 21.1 percent, respectively) (Figure 10). Students who transferred to suburban four-year institutions also had a higher propensity to complete a degree at those institutions (38.3 percent) than those who transferred to urban (35.4 percent) or rural institutions (29.3) (Figure 11).

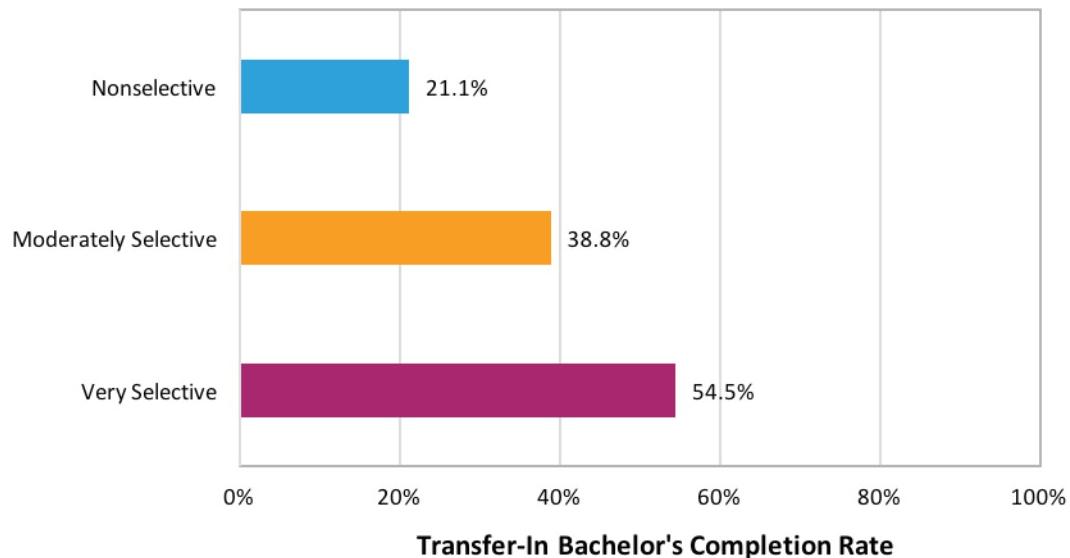
The results also showed that four-year institutions that serve students with a higher SES had, on average, higher rates of bachelors' degree completion rates. Forty three percent of students who transferred to four-year institutions that serve students from higher SES backgrounds graduated with a bachelor's degree within six years, as compared to slightly more than one-quarter (26.5 percent) of students at four-year institutions that predominantly serve students from lower SES backgrounds (Figure 12).

Figure 9. Transfer-In Bachelor's Completion Rates by Four-Year Institution Type (N=299,443)*



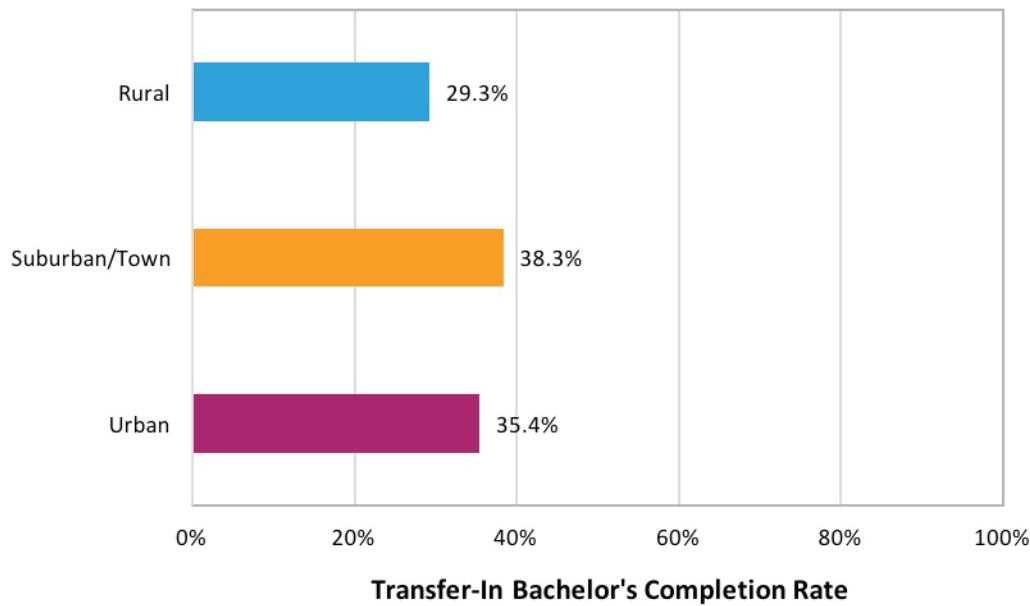
*This figure is based on data shown in Table 6.

Figure 10. Transfer-In Bachelor's Completion Rates by Four-Year Selectivity Level (N=295,687)*



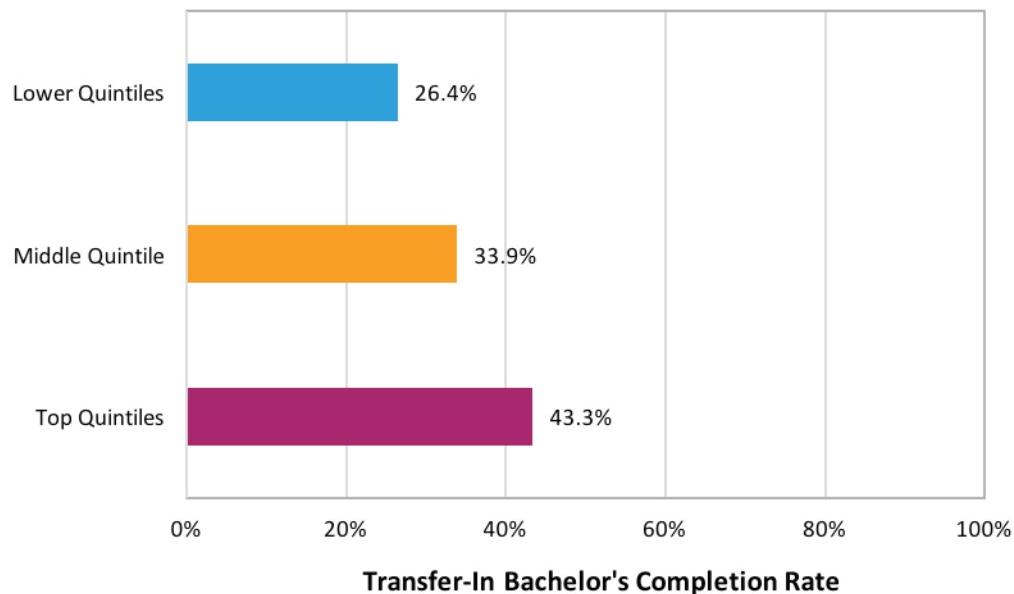
*This figure is based on data shown in Table 6.

Figure 11. Transfer-In Bachelor's Completion Rates by Four-Year Urbanicity (N=295,687)*



*This figure is based on data shown in Table 6.

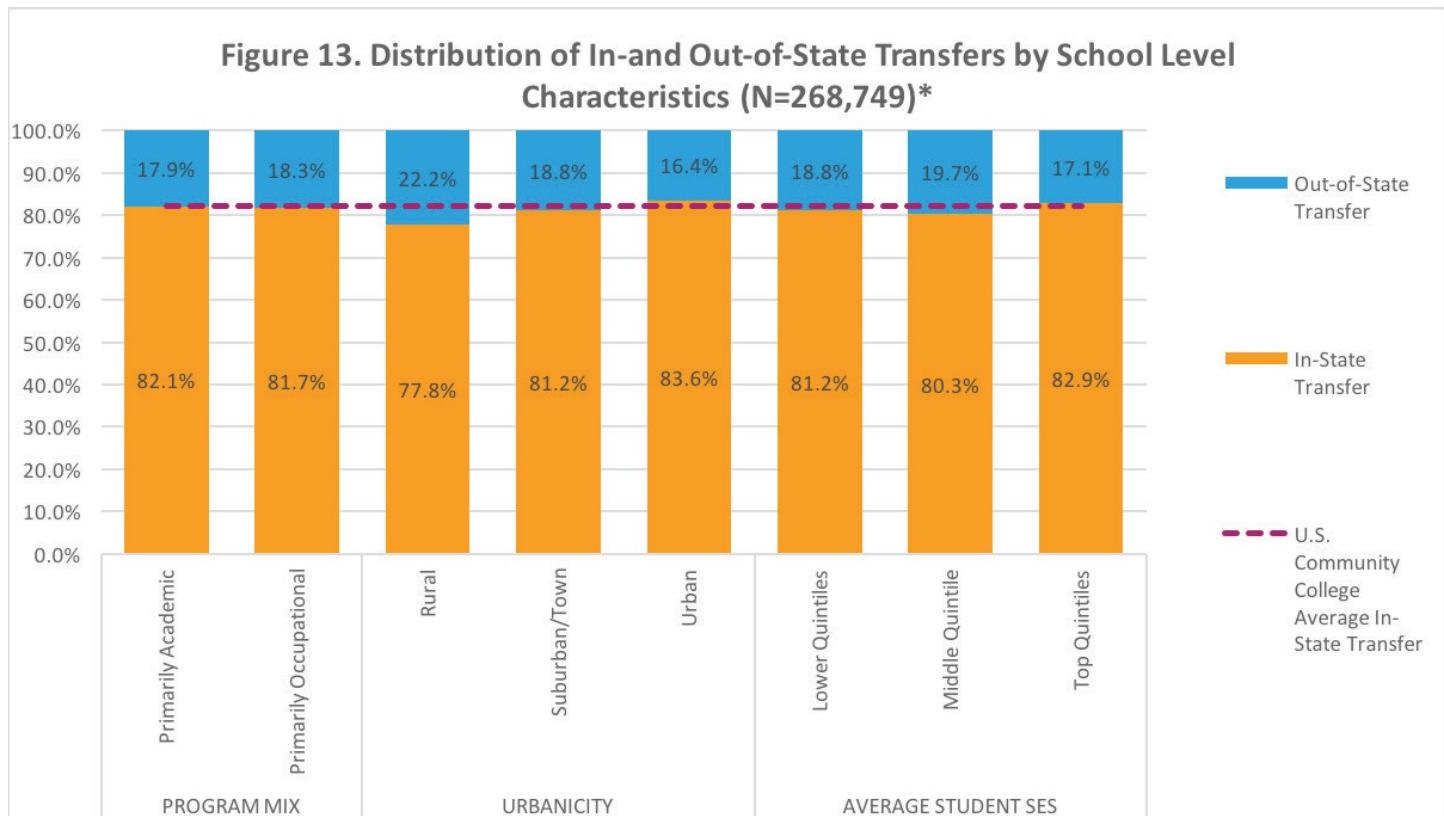
Figure 12. Transfer-In Bachelor's Completion Rates by Four-Year Average Student SES Levels (N=295,687)*



*This figure is based on data shown in Table 6.

State-Level Transfer Metrics

Figure 13 presents in- and out-of-state transfer rates by the characteristics of the starting two-year institution. In terms of program mix, the results revealed that regardless of whether the starting institution awarded primarily academic or occupational credentials, the in- and out-of-state transfer rates were generally consistent with the overall average: approximately 18 percent of students transferred to a four-year institution in a different state while 82 percent stayed in-state. In terms of urbanicity, however, students who started their postsecondary education at rural community colleges tended to transfer out-of-state more often (22.2 percent) than students who started at suburban (18.8 percent) or urban (16.4 percent) two-year institutions. Finally, with regards to the primary SES of the population the starting institution served, students who started at primarily lower and middle SES serving schools were more likely to transfer out of state (18.8 percent and 19.7 percent, respectively) than students who started at a primarily higher SES serving school (17.1 percent).



*This figure is based on data shown in Table 4a.

In the individual state-level results, the two-year metrics include:

- Overall state transfer rate
- Transfer-with-award rate
- Transfer-out bachelor's completion rate
- Community college cohort bachelor's completion rate

The four-year metric includes the state transfer-in bachelor's completion rate for four-year public and four-year private nonprofit institutions.

The five states with the highest transfer-out bachelor's completion rate are: Illinois (53.8 percent), Washington (50.7 percent), Iowa (49.7 percent), New Jersey (47.8 percent), and Florida (47.0 percent). The five states with the highest transfer-in bachelor's completion rate are: Iowa (54.1 percent), Washington (51.7 percent), Illinois (51.5 percent), Virginia (48.6 percent), and California (48.3 percent).

Detailed individual state-level results are presented in Appendix C.

DISCUSSION

The five transfer metrics presented in the report provide a comprehensive picture of community college student transfer and post-transfer outcomes from both the community college and four-year institution perspectives. This discussion is organized around the student and institutional characteristics to better assist institutions to:

- Understand the patterns of transfer and completion among different groups of students, and
- See how the specific characteristics of their own and their partner institutions may play a role in contextualizing their student transfer outcomes.

These results can help guide institutional effectiveness evaluations, progress monitoring as well as design targeted interventions. Overall, institutions should consider these results as essential benchmarks in tracking and evaluating their progress towards better serving the transfer student population. Although the statistics presented in this report provide comparative state and national numbers, it is important to interpret these numbers within the context of the institution, current programs and initiatives, and key transfer partners. We hope that this report, which will be updated annually, will provide community colleges and four-year institutions with the long-term research support needed to ultimately benefit students along their academic careers.

Primarily Occupational vs. Academic Community Colleges

Students from community colleges with primarily occupational and primarily academic focus had, surprisingly, similar transfer-out rates (32.0 percent and 31.4 percent, respectively). However, when it comes to degree completion, students from primarily occupational community colleges had higher transfer-with-award rates (35.8 percent versus 32.0 percent) and transfer-out bachelor's completion rates than students from primarily academic two-year institutions (43.8 percent and 40.9 percent, respectively). Overall, although students from both types of institutions have relatively similar transfer-out rates, differences emerge when degree completion is taken into consideration.

Transfer and Completion Outcomes by Average Student SES and Student Income Level

In terms of overall transfer rates, students attending lower SES serving community colleges were less likely to transfer to a four-year institution than students attending higher SES serving community colleges (26.3 percent and 34.6 percent, respectively). Although students from lower SES serving colleges were still less likely to transfer with an award (31.7 percent) than students from higher SES serving colleges (35.1 percent), the transfer gaps became smaller (a 3.4 percentage point gap in transfer-with-award versus 8.3 percentage point gap in the transfer-out rate). However, after transferring, students who transferred from higher SES schools had a bachelor's completion rate 9.0 percentage points higher than that for students who transferred from lower SES schools (44.7 percent and 35.8 percent, respectively). While there was a relatively small difference in the transfer-with-award rate, there was a substantial difference in the transfer-out bachelor's completion rate, which may indicate that the effects of socioeconomic differences tend to grow as students progress along their academic career.

This result is consistent with student-level characteristics. Lower income students have much lower transfer rates than higher income students (25.9 percent and 39.9 percent, respectively). When taking degree completion into consideration, lower and higher income students have similar transfer-with-award rates (33.1 percent and 32.8 percent, respectively), but higher income students were more likely to graduate with a bachelor's degree after transferring than lower income students (49.2 percent and 34.9 percent, respectively). This may be related to the potential differences between the types of four-year institutions attended by higher and lower income transfers. Higher proportions of lower income students may be more likely to transfer to a four-year institution that has less student and academic resources than students compared to higher income students. Overall, these results demonstrate that differences in the completion rate grow larger after transfer to a four-year school between lower and higher income students as well as those who transfer from lower SES serving community colleges as compared to those transferring from higher SES serving colleges.

Transfer and Completion Outcomes by Urbanicity of Community Colleges

The transfer-with-award rate for students who started at rural and suburban community colleges were practically identical (34.3 percent and 34.9 percent, respectively) whereas the transfer-with-award rate from an urban community college was slightly lower (32.4 percent). However, students from suburban community colleges were more likely to graduate with a bachelor's upon

transferring to a four-year institution (43.5 percent) than students who started at a rural community college (41.7 percent) or urban community college (40.8 percent).

Transfer and Completion Outcomes by Student Characteristics

Women were more likely to transfer than men (32.6 percent and 30.0 percent, respectively). The transfer-with-award rate was higher for women than men (36.3 percent and 31.4 percent, respectively) and they were slightly more likely to earn a bachelor's degree after transferring than men (43.0 percent and 41.3 percent, respectively). The gender gap was greatest at the two-year level with almost a five percentage point gender gap for the transfer-with-award rate, going down to a less than two percentage point gender gap for the transfer-out bachelor's completion rate.

Results show that enrollment intensity and student income levels may be more important at explaining transfer and completion outcome differences than gender. Consistent with prior reports, higher income students have better transfer outcomes than lower income students on all the five transfer metrics. Exclusively full-time and mixed enrollment students had similar transfer-out rates (33.5 percent and 35.1 percent, respectively). However, enrollment intensities matter for completions. Exclusively full-time students were more likely to transfer with an award as well as have a higher transfer-out bachelor's completion rate than mixed enrollment students. Although exclusively part-time students do the worst on all five measures of transfer and completion, this was expected given the limited six-year time frame for these outcomes.

Community College Cohort Bachelor's Completion Rate

Overall, out of all degree-seeking students who began at a community college, 13.3 percent earned a bachelor's degree within six years. This completion rate was 9.0 percent for lower income students and 19.6 percent for higher income students.

Community colleges with primarily occupational focus had slightly higher community college cohort bachelor's completion rate than schools with primarily academic focus (14.0 percent and 12.8 percent, respectively). Higher-SES serving community colleges had the highest cohort bachelor's completion rate (15.5 percent), much higher than the rate for lower-SES serving colleges (9.4 percent). The differences were not as substantial by urbanicity: suburban community colleges had only a slightly higher cohort bachelor's completion rate (14.1 percent) than rural community colleges (12.7 percent) and urban community colleges (12.6 percent). Despite these small differences by college characteristics, the overall rate of 13.3 percent shows in stark relief the fact that few students who start in a community college are able to earn their bachelor's degree within six years.

Outcomes for Four-Year Institutions

Public four-year schools had the highest transfer-in bachelor's completion rate (41.3 percent), followed by private nonprofit (31.4 percent) and private for-profit institutions (6.3 percent). This may be related to the timing of transfer: students who transferred to four-year public institutions did so slightly earlier in the six-year study period, on average, than those transferring to four-year private nonprofit and much earlier than those transferring to four-year private for-profit institutions. This may be reflective of fewer or shorter stop-outs, on average, resulting in more enrolled time to finish a bachelor's degree, or it may reflect shorter community college careers, resulting in fewer credits subject to transfer policies. It may also be related to the fact that public four-year schools are more likely to have an articulation agreement with community colleges, which enable students to transfer more credits.

In terms of urbanicity, students who transferred to urban four-year institutions had a higher bachelor's degree completion rate (35.4 percent) than students who transferred to rural four-year institutions (29.3 percent), but lower than those who transferred to a suburban four-year institution (38.3 percent).

In- and Out-of-State Transfers

Across all categories of two-year institutions that we considered, the out-of-state transfer rate ranged from 16.4 percent to 22.2 percent. The students who started at rural community colleges (22.2 percent) and colleges that serve primarily middle SES students (19.7 percent) were more likely to transfer out of state than students who started at any other category of school. The overall out-of-state transfer rate of 18 percent is surprisingly high, especially given the rising number of local articulation agreements, state-wide transfer policies, and low in-state tuition at public four-year universities. The number of transfer students leaving their starting state points to the importance of using national data to calculate these metrics, particularly for institutions that seek to understand their performance in the context of national trends that are not captured by state system reports. With more complete data, educators can seek to better understand and serve the needs of interstate students.

Trends in Key Transfer Metrics

This report updates the transfer performance metrics that were first introduced in the 2016 Tracking Transfer report. The original report examined the outcomes of students who began college in fall 2007. The 2010 cohort was 18 percent larger than the 2007 cohort[1], in line with the enrollment increases in community colleges during the Great Recession. The 2010 cohort was also much more likely to be over age 24 (24 percent vs 19 percent of the students), and slightly less likely to have enrolled full-time (by about one-half of a percentage point), than the students who started in 2007. These changes are similar to those in the student population at all types of institutions before and after the recession (see Signature Reports 6 and 12). The results for the 2010 cohort, however, revealed changes in some but not all transfer metrics. Specifically, the three-year trends in the transfer-out bachelor's completion rate (42.2 percent), and the transfer-in bachelor's completion rate for both four-year public (41.3 percent) and private nonprofit (31.4 percent) schools remained relatively the same from 2007 to 2010. The transfer-out rate, however, decreased from 33 percent to 31.5 percent. There was also a decrease in the community college cohort bachelor's degree completion rate (13.3 percent vs 14 percent). While the direction of the change in the cohort completion rate is not encouraging, some of it may be attributable to the cohort's older and more part-time students. It is also important to note that there were slight changes in definitions between this report and the original Tracking Transfer report, which may result in minor differences in the results. Internal validation checks, however, were made to make sure reliable comparisons can be made between the statistics from the 2007 CCRC report and this report (See Appendix A: Methodological Notes for detailed description of the definitions.

[1] The coverage rate for community colleges in the Clearinghouse data increased by about 5 percent in this period.

Annual Reporting on Key Transfer Metrics

The results in this report will help provide educators, researchers, and policymakers with the context and information needed to better serve the substantial number of students who begin their postsecondary careers at two-year institutions with the intent of completing a bachelor's degree. The results can be used for institution-level benchmarking, monitoring and evaluation, as well as to inform and guide state- and national-level policymaking and goal setting.

This report is the first in an annual series to be published by the National Student Clearinghouse Research Center. By calculating the five key metrics consistently over time, it will enable states and institutions to track progress year over year, leading to better understanding of the impacts of institutional characteristics, student demographics and enrollment trends, as well as new policies and practices as they are introduced.

APPENDIX A: METHODOLOGICAL NOTES

This report presents a set of transfer-related measures for two-year public institutions and four-year institutions. It focuses on transfer and degree and certificate completion for the cohort of first-time-in-college degree-seeking students who started their postsecondary education at U.S. two-year public institutions (community colleges) in the fall of 2010. Overall, there were 852,439 degree-seeking students in the fall 2010 cohort. The study tracks this cohort for six years, from August 13, 2010, through August 14, 2016, examining a set of metrics for community colleges and four-year institutions, including the number of students who transferred to four-year institutions, students who transferred with an associate degree or certificate earned at their starting community college, and those who earned a bachelor's degree at their four-year destination institution. The results are disaggregated by student-level characteristics (enrollment intensity, family income level, and gender), institutional sector (public, private nonprofit and private for-profit), and institutional-level characteristics (selectivity, program mix, average students' social economic status, and urbanicity).

National Coverage of the Data

The National Student Clearinghouse® (the Clearinghouse) is a unique and trusted source for higher education enrollment and degree verification. Since its creation in 1993, the participation of institutions nationwide in Clearinghouse data-collection programs has steadily increased. For fall 2010, the overall coverage rate nationally was 92.5 percent of students enrolled at all Title IV-eligible, degree-granting institutions. The coverage rate for students at community colleges was 97.2 percent. Today, Clearinghouse data include more than 3,600 colleges and 96.7 percent of U.S. college enrollments, including 99.4 percent of enrollments in community colleges. Due to its unique student-level approach to data collection, the Clearinghouse data provide opportunities for analysis not afforded by commonly used institution-level national databases.

The enrollment data used in this report provide an unduplicated headcount for the fall 2010 first-time-in-college student cohort. Clearinghouse data track enrollments nationally and are not limited by institutional and state boundaries. Moreover, because this database is comprised of student-level data, researchers can use it to link concurrent as well as consecutive enrollments of individual students at multiple institutions. For instance, in the National Center for Education Statistics (NCES) and the Integrated Postsecondary Education Data System (IPEDS), concurrent and transfer enrollments remain unlinked and, therefore, are counted as representing separate individuals. There are nationally representative samples (e.g., National Education Longitudinal Study, NELS:88/2000; Beginning Postsecondary Students Longitudinal Study, Educational Longitudinal Study, ELS:02; etc.) that are based on linked student-level data. However, these samples have limitations in terms of the currency of the data as well as its uses. For example, they typically cannot be used to produce regional or state-level results, and their lengthy data collection methods mean that results are often several years old by the time they are released.

Cohort Identification, Data Cut, and Definitions

Focusing on the cohort of first-time-in-college degree-seeking students who started their postsecondary studies at U.S. community colleges in the fall of 2010, this report examines completion over a span of six years, through August 14, 2016. The initial data extraction had 1,394,585 students who showed at least one enrollment record lasting 21 days or more, between August 9 and October 31 of 2010. This initial dataset excludes students without an active enrollment status - full-time or part-time- in their first term. After excluding non-degree seeking students (480,331) and students defined as dual enrollment students (217,487), the final cohort had 852,439 students (some students may have been in both non-degree seeking and dual enrollment students groups).

Below is the more detailed description of the definitions made to identify the study cohort.

To limit the cohort to first-time undergraduate students only, the study uses data from the Clearinghouse's StudentTracker and DegreeVerify services to confirm that students included in the study (1) showed no previous college enrollment, and (2) had not completed a college degree prior to the first day of enrollment in fall 2010.

Both current and former dual enrollment students were excluded from the cohort. Current dual enrollment students are those who were enrolled in both high school and college courses during fall 2010. Former dual enrollment students are first-time college students in fall 2010 who had previously enrolled in college courses while still in high school.

In defining the study cohort, it was necessary to identify a coherent set of first-enrollment records that would as closely as possible represent a starting point for the fall 2010 cohort of first-time-in-college students. With this goal in mind, the researchers excluded enrollment records that were either (1) not clearly interpretable within the study's framework and data limitations or (2) inconsistent with the experiences of first-time college enrollment that were the focus of the analysis. For students who showed concurrent enrollments at different institutions in the fall 2010 term, one primary starting community college was selected for each student according to the following decision rules:

1. Choose the enrollment record with the earliest term begin date
2. If the first decision rule did not result in a single record being selected, then a record with the latest term end date was selected
3. If the second decision rule did not result in a single record being selected, then a record was selected at random

Because our outcomes of interest were transfer to and completion at a four-year institution, we focused analyses on degree-seeking students only. Consequently, we attempted to exclude non-degree-seeking, casual course takers from the cohort. For students who first enrolled in a community college, degree-seeking students should meet one of the following criteria: (1) at least one full-time or graduated status during the first year or (2) at least two enrollment records, with at least one at three-quarter or both at half-time statuses.

In summary, the study cohort included students who fulfilled all of the following conditions:

Enrolled in a Title IV institution in fall 2010. This was defined as any term with a start date between August 9 and October 31, 2010, inclusive;

1. Did not have an enrollment record prior to their first fall term, as per the Clearinghouse data;
2. Did not receive any degree or certificate from a postsecondary institution prior to the first day of enrollment in fall 2010, according to Clearinghouse data;
3. Had at least one legitimate enrollment status lasting 21 days or more in the initial term;
4. Were 18 or older when first enrolled (a proxy used to exclude dual enrollment students from the cohort);
5. Showed intent to seek a degree or certificate. That is:
 - (a) Enrolled full-time for at least one term before August 14, 2011, or
 - (b) Enrolled at least half-time for any two terms before December 31, 2011, or
 - (c) Enrolled at least two terms with at least one term with three-quarter status before December 31, 2011.

Enrollment Intensity

For this report, enrollment intensity is classified as exclusively full-time throughout the study period, exclusively part-time throughout the study period, or mixed enrollment (including both full-time and part-time enrollments). For students who earned a bachelor's degree within the study period, we consider all their enrollments, at all institutions attended, through the first completion at a four-year institution. For students who only earned a certificate or associate degree within the study period, we consider their enrollments through their first completion at a two-year institution. For students who did not complete any award, we consider all their enrollments during the study period, at all institutions attended. Summer terms (defined as terms with both the start date and the end date falling between May 1 and August 31 in any given year) and short terms (defined as terms lasting less than 21 days) were excluded from consideration.

For terms in which a student showed concurrent enrollment (i.e., records from two or more institutions that overlapped by 30 days or more), the two highest-intensity enrollments were added. For example, a student concurrently enrolled half-time at two institutions was categorized as enrolled full-time for that term. Overall, the "exclusively full-time enrollment" designation was assigned to students whose enrollment for each term under consideration showed one of three situations: (1) the enrollment record showed full-time enrollment status; or (2) for terms with concurrent enrollments, the two highest-intensity enrollment records included at least one full-time enrollment or three-quarter enrollment status; or (3) for terms with concurrent enrollments, the two highest-intensity enrollment records both reflected half-time enrollment.

The "exclusively part-time enrollment" designation was assigned to students whose enrollment for each term under consideration showed one of the two following situations: (1) the enrollment record showed three-quarter or half-time or less than half-time

enrollment or (2) for terms with concurrent enrollments, the two highest-intensity enrollment records included some combination of half-time and less than half-time enrollments, but no full-time or three-quarter enrollment, and no more than one half-time enrollment.

The mixed enrollment category was applied to students who showed a combination of full-time and part-time enrollments across the terms under consideration.

Student Variables-Transfer Students

We categorized students as transfer students if they were first-time-ever-in-college, degree-seeking students who enrolled at a community college in the fall 2010 term and subsequently enrolled in a four-year institution before August 14, 2016. Of the fall 2010 cohort, 31.5 percent ($n = 268,749$) were defined as transfer students.

Student Variables- Income

We created a proxy measure of student household income by geocoding students' home address records from the Clearinghouse and matching each student's geocode with U.S. Census data on median household income at the level of the census tract. The census tract is a more precise geographical area than a ZIP code and therefore more likely to be homogeneous in demography (Crosta, Leinbach, & Jenkins, 2006; Geronimus & Bound, 1998). We then defined students from census tracts with median household incomes in the bottom 40 percent nationally as lower income students. Lower income students comprised 30.3 percent ($n = 258,048$) of the fall 2010 cohort and 24.9 percent ($n = 66,801$) of transfer students. Similarly, we used this procedure to define students from census tracts with median household incomes in the top 40 percent nationally as higher income. Higher income students comprised 28.6 percent ($n = 244,008$) of the fall 2010 cohort and 36.2 percent ($n = 97,357$) of transfer students. We excluded students in the middle income quintile (the middle 20 percent) from income comparisons in order to emphasize the differences between lower and higher income students.

Community Colleges and Four-Year Institutions

While we relied primarily on IPEDS 2015-16 data to categorize institutions as community colleges and four-year institutions, we revised the IPEDS categorization for some institutions that offer relatively few bachelor's degree programs. These institutions are listed as public four-year institutions in IPEDS but are more accurately categorized as community colleges based on their history, mission, and degree mix. The revisions are based on IPEDS data on Carnegie Classifications, program offerings, mix of associate versus bachelor's degrees awarded, and membership in national associations (mainly, the American Association of Community Colleges) to categorize institutions as either community colleges or four-year institutions. We excluded institutions in the U.S. Virgin Islands and Puerto Rico, yielding 865 community colleges and 1,992 four-year institutions in the final analytic sample.

Four-Year Sector

We disaggregated findings by four-year institutional sector using information merged from IPEDS. In the final analytic sample of four-year institutions, there were 647 public institutions, 1,079 private nonprofit institutions, and 217 private for-profit institutions, which accounted for 73 percent, 18 percent, and 8 percent of transfer enrollments from the 2010 cohort, respectively.

Selectivity

We used the 2015 Carnegie Undergraduate Profile Classification indicators, accessed through IPEDS, to categorize four-year institutions into three groups: very selective, moderately selective, and nonselective. There were 389 very selective institutions, 627 moderately selective institutions, and 826 nonselective institutions accounting for 22 percent, 44 percent, and 32 percent of transfer enrollments from the fall 2010 cohort, respectively. There was no selectivity information available through IPEDS for 150 of the four-year institutions, which accounted for less than two percent of the transfer enrollments.

Program Mix

To capture potential differences in student outcomes resulting from the types of programs offered at different colleges, we categorized community colleges based on their mix of academic and occupational associate degrees awarded. We used data from IPEDS 2015-16 data to group institutions into "primarily academic" and "primarily occupational" categories based on the ratio of academic to occupational associate degrees awarded by the institution. We classified colleges that awarded 40 percent

or more of their associate degrees in occupational fields (as opposed to associate of arts, associate of science, or associate of general education degrees) as primarily occupational and those that awarded less than 40 percent of their associate degrees in occupational fields as primarily academic. Overall, we classified 362 community colleges as primarily occupational and 503 as primarily academic.

Urbanicity

In our analysis, we used the location of each community college as a proxy measure of the likely availability of four-year options. We used IPEDS data on institutional locale to categorize community colleges and four-year institutions into three categories: urban, suburban/town, and rural.

Average Student Socioeconomic Status (SES)

We created a student-level SES variable by using U.S. Census data to derive a standardized composite of the median household income, educational attainment, and occupational profile of each student's home census tract. We then created an institution-level SES measure by taking the median student SES score for either all enrolled students (at community colleges) or all transfer students (at four-year institutions) in the fall 2010 cohort. Each institution was placed into lower, middle, or top quintiles based on the median SES score of its student population (see Crosta, Leinbach, & Jenkins, 2006).

APPENDIX B: RESULTS TABLES

Download at <https://nscresearchcenter.org/wp-content/uploads/Sig13AppendixB.xlsx>

APPENDIX C: STATE-LEVEL RESULTS

Download at <https://nscresearchcenter.org/wp-content/uploads/Sig13AppendixC.xlsx>

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